

CLAIMS:

1. A scroll compressor, comprising:

a housing having a stationary wall:

5 a pressure receiving area being in the housing;

a stationary scroll, wherein the stationary scroll has a

stationary base plate, a stationary volute portion, and a

circumferential wall, wherein the stationary base plate is

fixed to the housing and has a first face and a second face,

10 the first and second faces being oriented in the opposite

directions from each other, wherein the stationary volute

portion extends from the first face of the stationary base

plate and has a sealing end face, wherein the circumferential

wall is located around the stationary base plate, wherein,

15 with respect to a direction perpendicular to the first face,

the circumferential wall extends further from the first face

than the stationary volute portion, wherein the stationary

volute portion has an extended portion that extends for a

predetermined distance along an inner surface of the

20 circumferential wall from an outer end of the stationary

volute portion, and wherein a section of the sealing end face

that corresponds to the extended portion functions as a pump

chamber defining face;

a movable scroll, wherein the movable scroll has a

25 movable base plate and a movable volute portion, wherein the

stationary base plate has a circumferential surface, a first

face, and a second face, the first and second faces being

oriented in the opposite directions from each other, wherein

the first face of the movable base plate faces the sealing end

30 face, wherein the volute portions are engaged with each other

to form a gas compression chamber in between, wherein, as the

movable scroll orbits about an axis of the stationary scroll,

the gas compression chamber is moved from an outer portion

toward the center of the stationary volute portion, whereby

35 the volume of the gas compression chamber is decreased to

compress gas, wherein a section of the first face of the movable base plate that is close to the circumference contacts the pump chamber defining face, and wherein the second face of the movable base plate has a section that either contacts the pressure receiving surface or is located close to the pressure receiving surface with an infinitesimal clearance; and

a suction chamber located radially outside of the volute portions,

wherein the circumferential surface of the movable base plate and an inner surface of the circumferential wall form a sealing portion at sections contacting each other or at sections located close to each other with a narrow clearance, wherein the sealing portion moves along the inner surface of the circumferential wall as the movable scroll orbits,

wherein, when the sealing portion is located in a lower portion of the suction chamber, a pump chamber for lubricating oil is defined by the sealing portion, the pump chamber defining face, the pressure receiving area, the inner surface of the circumferential wall, and the circumferential surface of the movable base plate.

2. The compressor according to claim 1, further comprising an electric motor for causing the movable scroll to orbit, wherein the electric motor has an axis of rotation, wherein the housing defines a motor accommodating chamber that accommodates the electric motor such that the rotation axis of the motor is substantially horizontal, wherein the motor accommodating chamber is configured either such that the pressure in the motor accommodation chamber is substantially equal to the pressure in the suction chamber or such that the motor accommodating chamber forms part of a suction passage that guides gas from the outside to the suction chamber, and wherein a bottom portion of the motor accommodating chamber is connected to a lower portion of the suction chamber through an oil return passage.

3. The compressor according to claim 2, wherein lubricating oil in the bottom portion of the motor accommodating chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage.

4. The compressor according to claim 2, further comprising a discharge chamber, the pressure of which is a discharge pressure, wherein a first reservoir chamber is located in the discharge chamber to store lubricating oil, wherein a back pressure chamber is defined between the second face of the movable base plate and the stationary wall, wherein the back pressure chamber is connected to the first reservoir chamber through a fluid passage having a constriction, and wherein the back pressure chamber is connected to the motor accommodating chamber through an oil bleed passage having a constriction or an adjuster valve.

5. The compressor according to claim 4, wherein a second reservoir chamber is formed at a bottom portion of the motor accommodation chamber, the second reservoir chamber bulging downward.

6. The compressor according to claim 5, wherein lubricating oil in the second reservoir chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage.

7. The compressor according to claim 4, wherein an elastic body is located between the second face of the movable base plate and the stationary wall, and has the pressure receiving area, the elastic body urging the movable scroll toward the stationary scroll, and wherein the elastic body seals the back pressure chamber and the suction chamber from

each other.

8. The compressor according to claim 7, wherein a second reservoir chamber is formed at a bottom portion of the motor accommodation chamber, the second reservoir chamber bulging downward, wherein lubricating oil in the second reservoir chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage, and wherein the elastic body is a doughnut-shaped plate and includes a part of the oil return passage.

9. The compressor according to claim 7, wherein an annular projection extends from the second face of the movable base plate, and wherein the annular projection is pressed against the elastic body, thereby sealing the back pressure chamber.

10. The compressor according to claim 1, wherein the surface of the movable scroll is plated with nickel phosphorus.

11. A scroll compressor, comprising:  
a housing having a stationary wall:  
a pressure receiving area being in the housing;  
a stationary scroll having an axis, wherein the stationary scroll is arranged such that the axis is substantially horizontal, wherein the stationary scroll has a stationary base plate, a stationary volute portion, and a circumferential wall, wherein the stationary base plate is fixed to the housing and has a first face and a second face, the first and second faces being oriented in the opposite directions from each other, wherein the stationary volute portion extends from the first face of the stationary base plate and has a sealing end face, wherein the circumferential wall is located around the stationary base plate, wherein,

with respect to a direction perpendicular to the first face, the circumferential wall extends further from the first face than the stationary volute portion, wherein the stationary volute portion has an extended portion that extends for a  
5 predetermined distance along an inner surface of the circumferential wall from an outer end of the stationary volute portion, and wherein a section of the sealing end face that corresponds to the extended portion functions as a pump chamber defining face;

10 a movable scroll, wherein the movable scroll has a movable base plate and a movable volute portion, wherein the stationary base plate has a circumferential surface, a first face, and a second face, the first and second faces being oriented in the opposite directions from each other, wherein  
15 the first face of the movable base plate faces the sealing end face, wherein the volute portions are engaged with each other to form a gas compression chamber in between, wherein, as the movable scroll orbits about an axis of the stationary scroll, the gas compression chamber is moved from an outer portion  
20 toward the center of the stationary volute portion, whereby the volume of the gas compression chamber is decreased to compress gas, wherein a section of the first face of the movable base plate that is close to the circumference contacts the pump chamber defining face, and wherein the second face of  
25 the movable base plate has a section that either contacts the pressure receiving surface or is located close to the pressure receiving surface with an infinitesimal clearance; and

a suction chamber defined between the inner surface of the circumferential wall and the circumferential surface of  
30 the movable base plate,

wherein the circumferential surface of the movable base plate and an inner surface of the circumferential wall form a sealing portion at sections contacting each other or at sections located close to each other with a narrow clearance,  
35 wherein the sealing portion moves along the inner surface of

the circumferential wall as the movable scroll orbits, wherein, when the sealing portion is located in a lower portion of the suction chamber, a pump chamber for lubricating oil is defined by the sealing portion, the pump chamber  
5 defining face, the pressure receiving area, the inner surface of the circumferential wall, and the circumferential surface of the movable base plate.

12. The compressor according to claim 11, further  
10 comprising an electric motor for causing the movable scroll to orbit, wherein the electric motor has an axis of rotation, wherein the housing defines a motor accommodating chamber that accommodates the electric motor such that the rotation axis of the motor is substantially horizontal, wherein the motor  
15 accommodating chamber is configured either such that the pressure in the motor accommodation chamber is substantially equal to the pressure in the suction chamber or such that the motor accommodating chamber forms part of a suction passage that guides gas from the outside to the suction chamber, and  
20 wherein a bottom portion of the motor accommodating chamber is connected to a lower portion of the suction chamber through an oil return passage.

13. The compressor according to claim 12, wherein  
25 lubricating oil in the bottom portion of the motor accommodating chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage.

30 14. The compressor according to claim 12, further comprising a discharge chamber, the pressure of which is a discharge pressure, wherein a first reservoir chamber is located in the discharge chamber to store lubricating oil, wherein a back pressure chamber is defined between the second  
35 face of the movable base plate and the stationary wall,

wherein the back pressure chamber is connected to the first reservoir chamber through a fluid passage having a constriction, and wherein the back pressure chamber is connected to the motor accommodating chamber through an oil bleed passage having a constriction or an adjuster valve.

15. The compressor according to claim 14, wherein a second reservoir chamber is formed at a bottom portion of the motor accommodation chamber, the second reservoir chamber bulging downward.

16. The compressor according to claim 15, wherein lubricating oil in the second reservoir chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage.

17. The compressor according to claim 14, wherein an elastic body is located between the second face of the movable base plate and the stationary wall, and has the pressure receiving area, the elastic body urging the movable scroll toward the stationary scroll, and wherein the elastic body seals the back pressure chamber and the suction chamber from each other.

18. The compressor according to claim 17, wherein a second reservoir chamber is formed at a bottom portion of the motor accommodation chamber, the second reservoir chamber bulging downward, wherein lubricating oil in the second reservoir chamber is drawn into the suction chamber by pumping action of the pump chamber through the oil return passage, and wherein the elastic body is a doughnut-shaped plate and includes a part of the oil return passage.

19. The compressor according to claim 17, wherein an annular projection extends from the second face of the movable

base plate, and wherein the annular projection is pressed against the elastic body, thereby sealing the back pressure chamber.

- 5            20. The compressor according to claim 11, wherein the surface of the movable scroll is plated with nickel phosphorus.